Appendix E

Equipment Diagrams For Pulp and Paper Mills

List of Figures

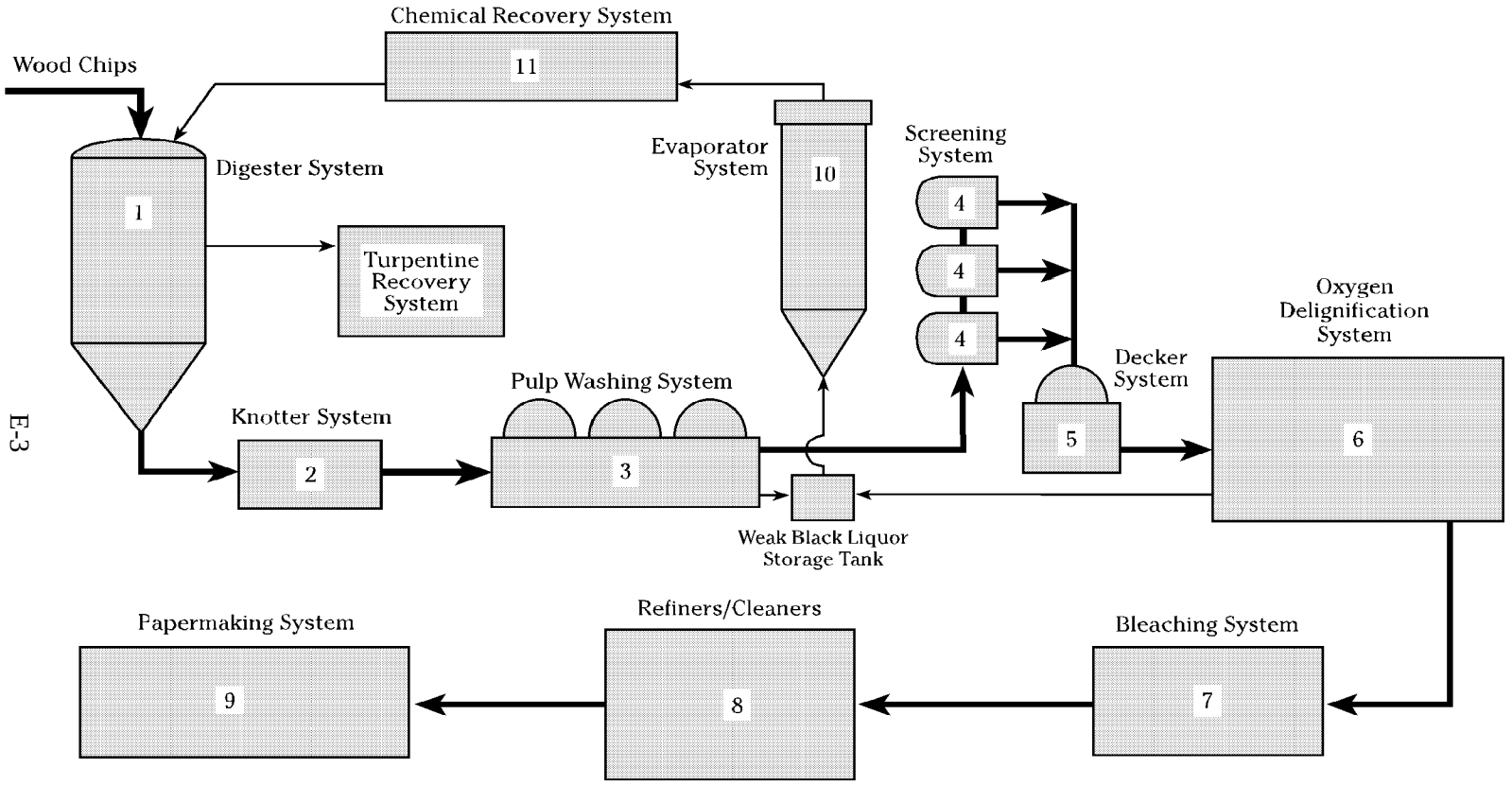
SUMMARY OF FIGURES

These figures are intended to serve as an overview of the various processes that exist at kraft, semi-chemical, soda, and sulfite pulp and paper mills. Figure 1 provides an overview of the entire pulp and papermaking process at a kraft mill. This general process is followed at semi-chemical, soda, and sulfite mills, therefore, process overviews are not repeated for those mills. Figures 2, 13, 18, and 22 illustrate the various processes within pulping systems at kraft, semi-chemical, soda, and sulfite mills, respectively. Process blocks in these figures that list collection systems indicate the processes that are subject to the Pulp and Paper NESHAP. Alternatively, process blocks that do not list collection systems are not subject to the Pulp and Paper NESHAP. The figures that follow Figures 2, 13, 18 and 22 provide greater detail about the specific processes and equipment in these pulping systems. Figures 29, 30, and 31 illustrate the processes and equipment used in bleaching systems, steam stripper systems, and biological treatment systems, respectively.

Disclaimer

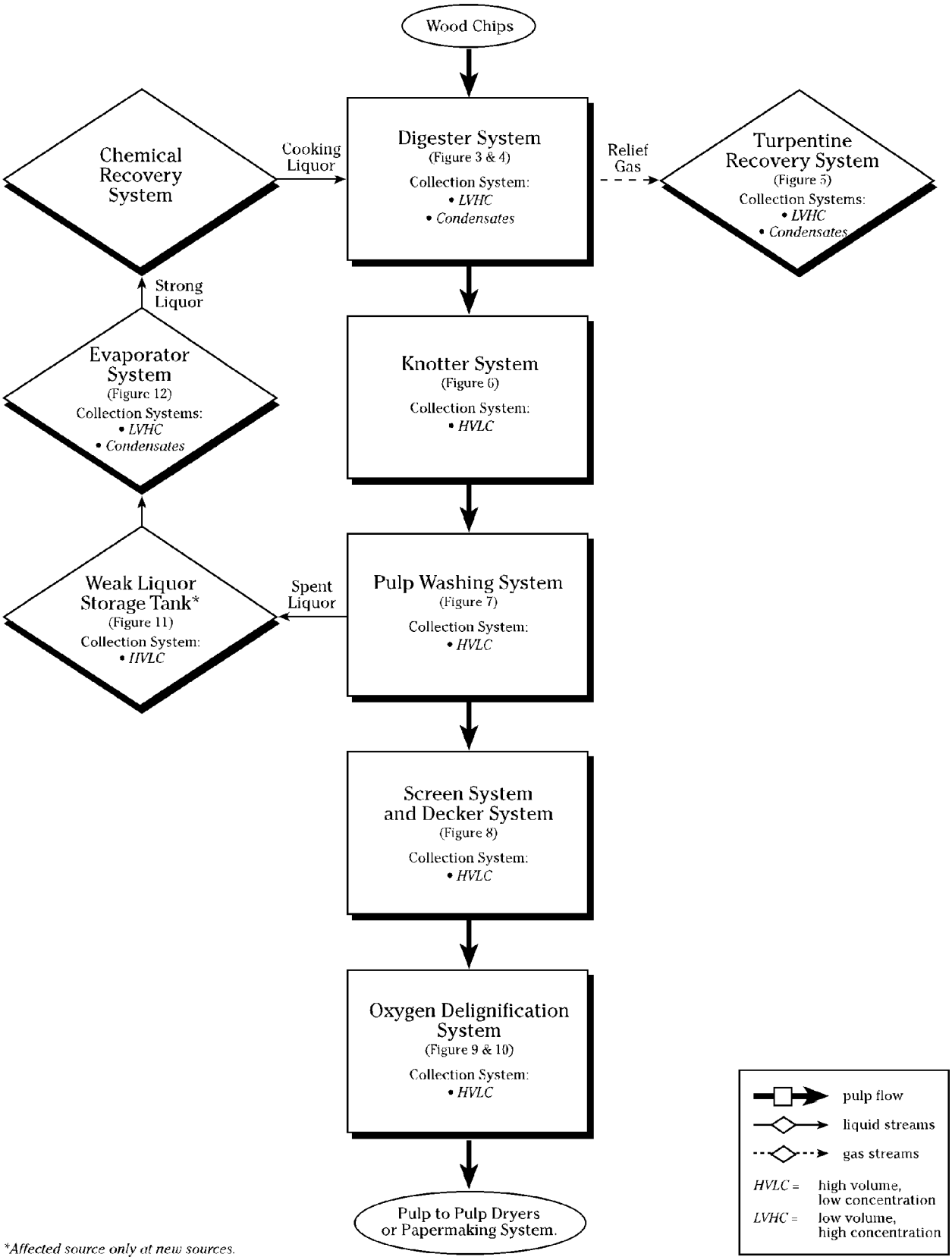
The following figures are representations of pulping and bleaching systems and processes for the purpose of clarifying the Pulp and Paper NESHAP. They are intended to provide the reader with a general understanding of processes at pulp and paper mills; not pulping and bleaching systems at specific mills.

Figure 1
Example Overview of a Kraft Pulping Mill with a Papermaking System



1–Cooking liquor added to wood chips to dissolve lignin.
2–Removal of uncooked chips and knots.
3–Weak black liquor washed from pulp.
4–Fiber bundles and contaminants screened from pulp.
5–Pulp thickened for oxygen delignification.
6–Oxygen Delignification System for further delignification.
7–Pulp bleached to increase whiteness.
8–Pulp is cleaned and prepared for papermaking.
9–Paper sheet formed through dewatering.
10–Evaporator System removes excess water from the weak black liquor.
11–Chemical recovery system converts the concentrated liquor into cooking liquor for use in the digester system.

Figure 2 – Example Kraft Pulping System



*Affected source only at new sources.

Figure 3 – Example Kraft Digester System (batch)

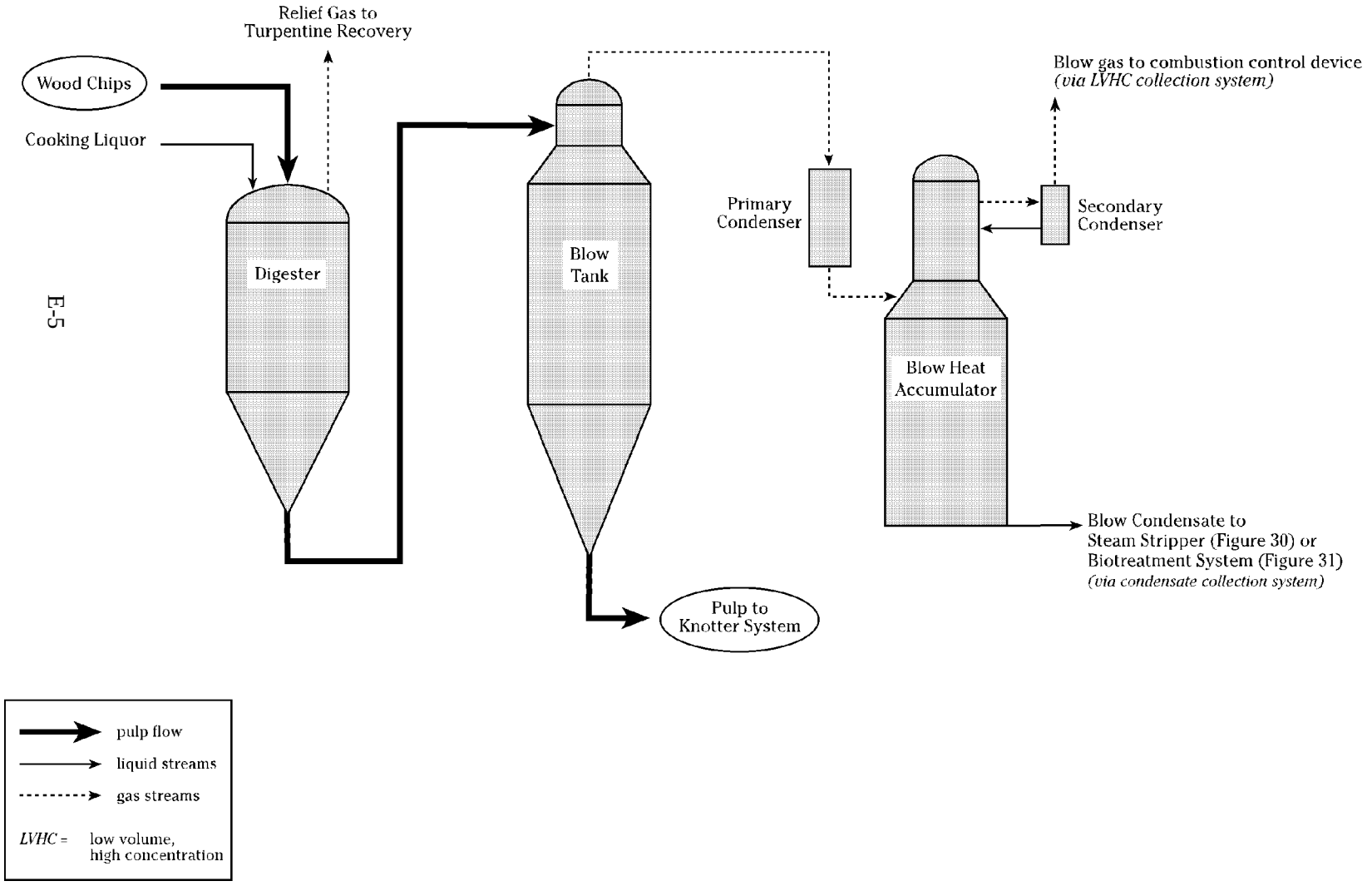
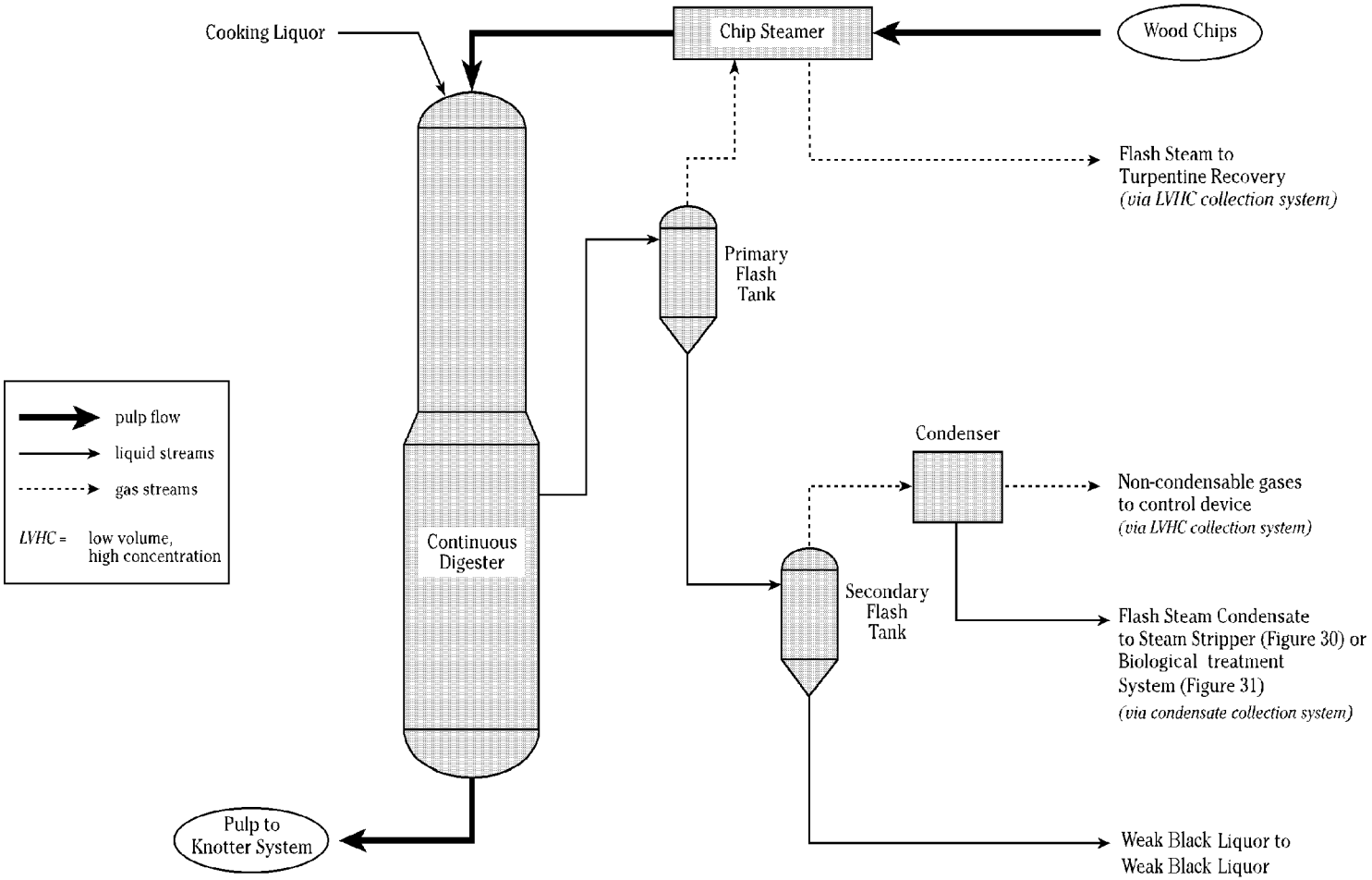


Figure 4 – Example Kraft Digester System (continuous)*



Blow tank for continuous digester is not pictured.

Figure 5 – Example Kraft Turpentine Recovery System

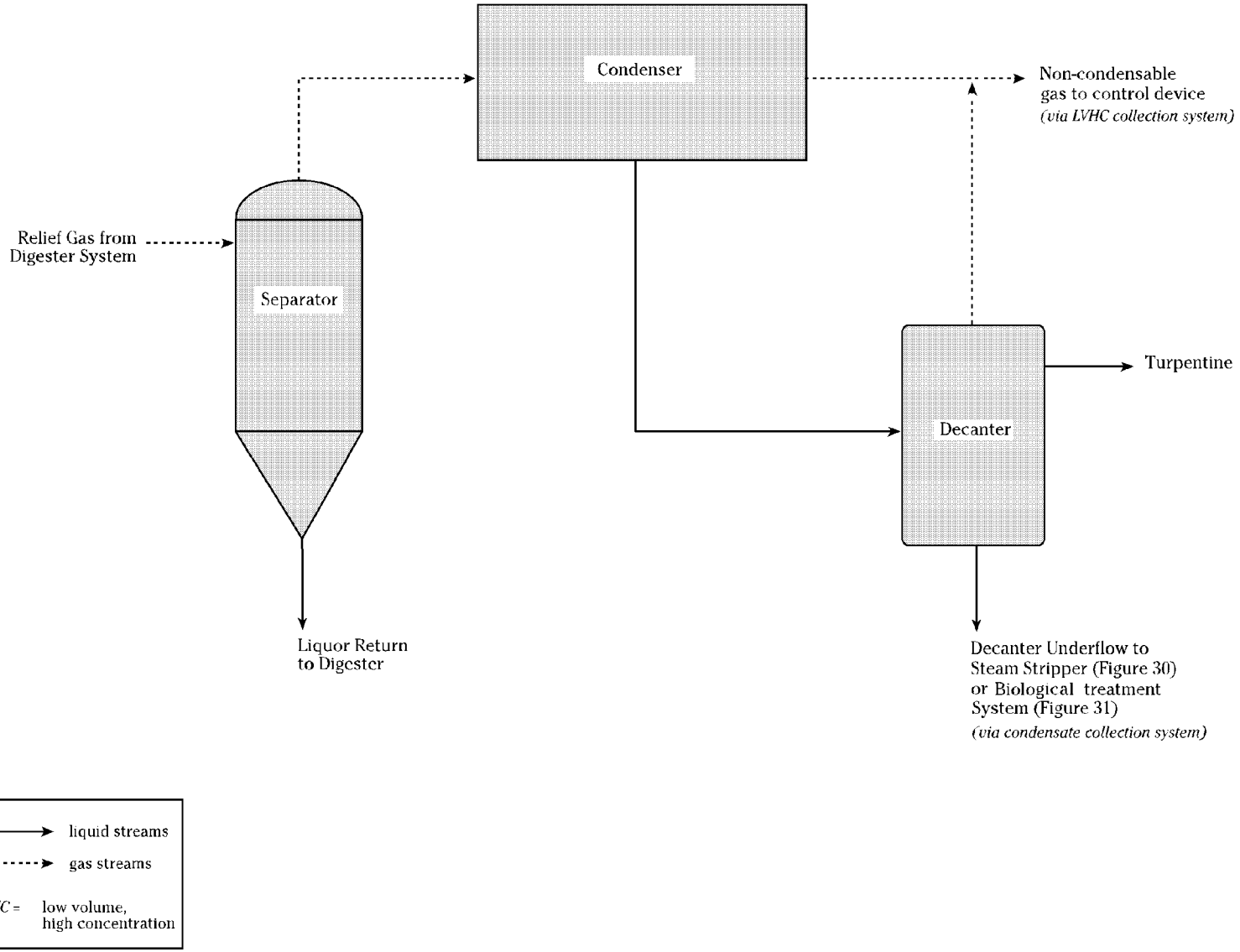


Figure 6 – Example Kraft Knotter System